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Conference Abstract

OpenBiodiv-O Ontology: Bridging the Gap Between Biodiversity Data and Biodiversity Publishing

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Abstract

Communication of research findings is the last and arguably the most influential step of the scientific process. This is especially true for biodiversity science, in which new species descriptions and introduction of new taxonomic names happens through publication, as governed by the International Codes. Despite the strict rules for naming new taxa and revising existing taxonomic nomenclatures within scholarly literature, there is no system for keeping track of these changes and information often remains locked within the text of thousands of scattered journal articles. This talk presents OpenBiodiv-O, the first ontology which conceptually models the biodiversity publishing domain and through its application in the semantic graph database OpenBiodiv contributes to knowledge management of this domain.

In combination with already existing ontologies for biodiversity and publishing (e.g. DarwinCore-based ontologies, SPAR ontologies), resource types introduced by OpenBiodiv-O help to create a link between these two domains. The ontology models the general structure of a research article, including sections specific to taxonomic articles, such as the treatment section, as well as other conceptual entities from taxonomy, like scientific names and taxonomic concepts. Thus, OpenBiodiv-O links scientific names to the corresponding article section in which they are mentioned via the class Taxonomic Name

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Usage and helps to discover hidden relationships between names. In addition, OpenBiodiv-O models the article metadata, such as the author names, affiliations and unique identifiers. The *orcid* class from the recently introduced Datacite ontology within OpenBiodiv-O models the ORCID of authors and will enable the future disambiguation of authors and linking with other platforms using ORCID.

OpenBiodiv-O has been applied to the biodiversity knowledge graph OpenBiodiv, which is based on a Linked Open Dataset, created from Pensoft's journal articles and Plazi's treatments. Publishing of semantically enhanced scholarly literature as XML enables the conversion of semi-structured narrative into connected Resource Description Framework (RDF) statements. The ontology serves as a skeleton for the transformation of more than 729 million statements into a Linked Open Dataset. Reusing of existing ontologies within OpenBiodiv-O helps to establish a link between OpenBiodiv-O and other ontologies and facilitates federated querying between OpenBiodiv and other knowledge graphs. The application of OpenBiodiv-O towards a working solution for the biodiversity publishing domain demonstrates the potential of ontology modelling for data organisation and management.

Keywords

Biodiversity publishing, ontology, taxonomic names, Linked Open Data, semantic database

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